In the Claims

1. (Currently amended) An optical amplifier comprising a gain fiber having a doped fiber core and a cladding layer surrounding the core, the mode field diameter of the gain fiber being greater than 10 μm and the refractive index difference between the core and the cladding layer being selected such that the cut-off wavelength at which the gain fiber becomes single mode lies in the range 1000-1550nm.

2. (Original) An optical amplifier according to claim 1, wherein the cut- off wavelength lies between 1300 and 1450nm.

3. (Original) An optical amplifier according to claim 1, wherein the mode field diameter is between 10 and 14 μm.

4. (Currently amended) An optical amplifier comprising multiple gain fiber sections, a first gain fiber section being positioned at the input of the amplifier, and a second gain fiber section being positioned at the output of the amplifier, wherein the second gain fiber section comprises a doped fiber core and a cladding layer surrounding the core, the mode field diameter of the fiber being greater than 10 μm, and the magnitude of the radial variation of refractive index difference between the core and the cladding layer being selected such that the cut- off wavelength at which the fiber becomes single mode lies in the range 1000-1550nm, and wherein the first gain fiber section has a lower mode field diameter than the second gain fiber section.

5. (Original) An optical amplifier according to claim 4, wherein the cut- off wavelength of the second fiber section lies between 1300 and 1550nm.

6. (Original) An optical amplifier according to claim 4, wherein the mode field diameter of the second fiber section is between 10 and 14 μm.

7. (Currently amended) An optical transmission system comprising a transmitting node, a receiving node and an optical fiber link between the nodes, wherein the link includes one or more amplifying repeaters, each comprising an amplifier comprising a gain fiber having a doped fiber core and a cladding layer surrounding the core, the mode field diameter of the gain fiber being greater than 10 μm and the refractive index difference between the core and the cladding layer being selected such that the cut- off wavelength at which the gain fiber becomes single mode lies in the range 1000-1550nm.

8. (Currently amended) An optical transmission system comprising a transmitting node, a receiving node and an optical fiber link between the nodes, wherein the link includes one or more amplifying repeaters, each comprising an amplifier having two or more gain fiber sections, a first gain fiber section being positioned at the input of the amplifier, and a second gain fiber section being positioned at the output of the amplifier, wherein the second gain fiber section comprises a doped fiber core and a cladding layer surrounding the core, the mode field diameter of the fiber being greater than 10 μm and the refractive index difference between the core and the cladding layer being selected such that the cut- off wavelength at which the fiber becomes single mode lies in the range 1000-1550nm, and wherein the first gain fiber section has a lower mode field diameter than the second gain fiber section.

9. (Currently amended) A method of designing an optical gain fiber comprising a core and cladding, for use in an optical amplifier, comprising the steps of:

selecting a core diameter such that the mode field diameter of the gain fiber is greater than 10 μm and such that low frequency attenuation is below desired limits;

selecting a refractive index difference between the core and the cladding layer such that the cut-off wavelength at which the gain fiber becomes single mode lies in the range 1000-1550nm and such that bending losses are below desired limits.